Rock Island Arsenal
Shop C
(Building 104)
Rodman Avenue between First Street
and Second Street
Rock Island
Rock Island County
Illinois

HAER No. IL-20-G

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20013-7127

HAER
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HISTORIC AMERICAN ENGINEERING RECORD

ROCK ISLAND ARSENAL
SHOP C
(Building 104)
HAER No. IL-20G

Location: Rodman Avenue Between First Street and Second Street,
Rock Island Arsenal,
Rock Island,
Rock Island County, Illinois
UTM: 15.704830.4598870
Quad: Davenport East

Date of Construction: 1867-1873

Present Owner and Occupant: U.S. Army

Present Use: Administrative offices

Significance: After taking command of Rock Island Arsenal in 1865, General Thomas Jefferson Rodman devised a master plan for the installation calling for the construction of ten large, Greek Revival, manufacturing shops, five on each side of the island's major east-west thoroughfare. Under construction from 1867 to 1873, Shop C was the second to be completed, and the first to be equipped for manufacturing. With its companion facilities completed under the Rodman plan, Shop C forms a cohesive architectural statement, which, in terms of both scale and style, has no counterpart among government installations in the Midwest.

An addition to their architectural importance, the Rodman shop buildings are the administrative and technological core of Rock Island Arsenal, one of only two "old-line," nineteenth-century arsenals still in operation for munitions production. The buildings are vital for understanding the history of American ordnance development and manufacture from the Spanish American War to the present. Shop C is part of the Rock Island Arsenal National Register Historic Distict.

Historian: Jeffrey A. Hess, February 1985

Architectural Historian: David Arbogast, February 1985

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: According to Colonel Daniel Webster Flagler, who succeeded General Thomas Jefferson Rodman as the arsenal's commandant in 1871, the building site was selected by Rodman in February 1866 (Flagler, p. 118). Construction commenced in September 1867, and the building was completed in June 1873 (Flagler, pp. 256). A datestone in the northwest corner of the north elevation bears the inscription, "Begun 1867 Finished 1873."

2. Architect: General Thomas Jefferson Rodman (Flagler, p. 261). Born in Salem, Indiana in 1815, Rodman graduated from West Point in 1841 and was assigned to Allegheney Arsenal in Pittsburgh as an officer of the Ordnance Department. During the next two decades, he developed techniques for hollow casting cannon and for producing perforated propellant, which revolutionized the manufacture and use of artillery (Zabecki, pp. 55-56; Flagler, pp. 262-266).

   As commandant of Watertown Arsenal near Boston from 1859 to 1865, Rodman was responsible for designing a machine shop for the installation, which was a simplified, brick version of the Greek Revival stone manufacturing shops he subsequently planned for Rock Island Arsenal (Baylies and Bahr, p. 37). Rodman assumed command of Rock Island Arsenal in 1865; he died of illness at the installation in June 1871 (Flagler, pp. 116, 261).

3. Original and subsequent owners: U.S. Army.

4. Builder, contractor, suppliers:

   "Stone was furnished by Messrs. Sanger & Steel, of Joliet, Ill., from their limestone quarries on the Illinois and Michigan Canal, about two miles north of Joliet. The price paid was $6 per cubic yard, delivered at the quarries and measured in the walls of the [building], excluding all openings and builder's or constructive measurements. The cost of transportation to the arsenal was about $5.50 per yard. . . . Messrs Sanger & Steele did not deliver all the stone required . . . . They continued to deliver stone until August 1870, and then refused to deliver any more unless they were paid 40 cents per foot for the remainder of the deminesion stone required. . . . It was finally purchased from Mr. Edwin Walker, of Lamont, Ill,. at an average price of 38 1/2 cents per cubic foot. This stone is the same in appareance and is almost identical in character and quality with the Joliet stone" (Flagler, pp. 256, 260).

"Messrs. Cooper & Hewitt, of New York, furnished the 15 inch I beams (stringers) for the first and second floors, and all the 12 inch I beams (joists) for the second floors. Date of contract, April 21, 1868" (Flagler, p. 256).

"The Union Iron Mills, of Pittsburgh, Pa., furnished all 12 inch I beams (joists) required for the first floors. Date of contract, May 8, 1868" (Flagler, p. 256).

"The Phoenix Iron Company, of Philadelphia, furnished all the 12 inch I beams (stringers) and all the 9 inch I beams (joists) required for the third floors [,] all the wrought iron columns and cast iron column caps and bases . . ., and the wrought iron roof frames, [which were] manufactured ready to be put up. Date of cotract, May 20, 1868" (Flagler, p. 257).

"The cement . . . was furnished by Messrs. James Clark & Sons, of Utica, Ill., at $1.55 per barrel of 300 pounds delivered at the arsenal. The lime was purchased from W. B. Barnes, of Rock Island, Ill., at 90 cents per barrel of 200 pounds delivered at the arsenal" (Flagler, p. 257).

"The oak flooring was furnished by Messrs. French & Davies, of Davenport, Iowa, at $41.50 per M, and the pine lumber by Mr. J. S. Keator, of Moline, Ill., at prices varying from $17 to $22 per M" (Flagler, p. 257).

"The copper work was furnished and put on by Mr. F. Hass, of Rock Island, Ill., and cost about $13,000" (Flagler, p. 257).

"The glass used was manufactured by Knox, Kine & Co., of Pittsburgh, Pa., and was furnished by Messrs. H. Dart's Sons, of Rock Island, Ill." (Flagler, p. 257).

"The fire proof brick arches were put in by Messrs. Atkinson & Murdock, of Rock Island, Ill., at $15.50 per M, (builder's measurement)" (Flagler, p. 257).

Slate roofing was put on by Charles C. Hipwell, a foreman of Aiken & Co. of Pittsburgh, for $14.50 per square (Flagler, p. 257).

All other construction work was "done by day workmen, employed and paid by the Government. The work was directed and superintended directly by officers of the Ordnance Department stationed at the arsenal, and the necessary engineering work, calculations, making of tests, experiments, etc., was also done by the officers" (Flagler, p. 260).

5. Original plans and construction: On February 7, 1866, Rodman submitted to the War Department a schematic site plan of the arsenal, proposing the construction of ten manufacturing shops, five on each side of the arsenal's main east-west thoroughfare (later named Rodman Avenue). The plan was published in 1877 (Flagler, Plate I). It delineates the ten buildings, including Shop C, as U-shaped structures with a crossbar connecting the legs of the "U" at midpoint.

   According to Flagler, the configuration of the buildings was almost immediately changed. "To add strength to the walls [and] beauty to the architecture," two porticos were added to the front and to each of the sides of the buildings. Also, the crossbar between the legs of the "U" was removed "to leave the courtyard clear for teaming purposes" (Flagler, p. 123). The revised plan was published in 1877, along with a "Side Elevation" and "Plan of First Floor" of Shop C (Flagler, Figure 1, inset on Plate I; Plate III, Plate IV). A detailed description of original construction is furnished by Flagler (pp. 124-125). The picture collection of the Rock Island Arsenal Historical Office contains a photograph, taken about 1871, that shows the building in the final stages of construction, lacking sash, doors, and some roof sheathing (see HAER Photo No. IL-20G-4). The building's present configuration conforms to original construction, except for a one-bay, two-story, brick addition to the southeast corner of the west wing and the southwest corner of the east wing.

6. Alterations and additions: At undetermined dates, the original slate roofing was replaced by composition roofing, and the original stone entrance steps were replaced with concrete steps.

   Before June 1918, a one-bay, two-story, brick addition for toilet facilities was erected at the southeast corner of the west wing and the southwest corner of the east wing. These additions appear on microfiche copies of floor plans, dated June 17, 1918, in the Rock Island Arsenal Engineering Plans and Services Division. The additions are also depicted in a 1944 photograph in the picture collection of the Rock Island Arsenal Historical Office (see HAER Photo No. IL-20G-5).

   In 1917-1918, the facades of the pavilions on the building's west elevation were demolished. The original stonework from the demolished sections was reused in constructing a three-story, stone-veneered, Greek Revival structure connecting the remaining portions of the pavilions to Shop A. The new building, designated as "A-C Connection," was designed and built by Stone and Webster Company of Boston; it was completed in July 1918 (Completion Report,, p. 3; see HAER No. IL-20S).

After World War II, the interior open shop spaces were partitioned into administrative offices (Interview with Bouilly).

About 1981, the original limestone cornice and eaves were replaced with a fiberglass material painted tan to simulate the original stonework. The Rock Island Arsenal Historical Office has a 1981 photograph documenting a similar alteration on Shop B. It is captioned on the back, "Bldg. 60, looking N., cornice repair, 20 Feb. 81."

B. Historical Context:

After assuming command of Rock Island Arsenal in August 1865, General Thomas Jefferson Rodman devised a master construction plan for the installation, which he submitted to the War Department on February 7, 1866. In its general outline, Rodman's plan called for the construction of ten large, stone, manufacturing shops, five on each side of the arsenal's main east-west thoroughfare (later named Rodman Avenune). The establishments on the south side of the avenue were called "arsenal shops," which meant they were to be devoted to the manufacture of general ordnance items. Those on the north side were called "armory shops," because they were intended for small arms production. All ten shops were designed in a Greek Revival style, which Rodman had previously used in designing a machine shop at Watertown Arsenal near Boston. Although none of the shops was completed before Rodman died of illness in June 1871, all ten were eventually finished by his nineteenth-century successors (Flagler, p. 118; Nothstein and Stephens, pp. 153-157.)

Situated on the western half of "arsenal row," Shop C was the second shop completed and the first equipped with machinery. In 1872, as the building was nearing completion, a free-standing boiler house was erected in the shop's courtyard to service a Corliss steam engine installed in the shop's basement (Flagler, p. 271; "History of Rock Island Arsenal," pp. 14, 73; for additional information on the boiler house, see HAER No. IL-20K). In 1879, steam power was supplemented by a telodynamic system driven by water turbines at a dam on the island's south-central shore. In 1901, the arsenal's telodynamic system was replaced by a hydroelectric plant (see HAER No. IL-20CC), and subsequently most of the machinery in Shop C was electric-powered ("History of Rock Island Arsenal, pp. 73-75).

During the nineteenth century, Shop C was the arsenal's main manufacturing establishment, containing a machine shop, metalworking shop (known as "equipment shop"), harness and leather shop, print shop, woodworking and carpenter shop, tinning shop, and plating shop. The finished products included materials for the arsenal's own

construction program, such as sash, doors, and hardware, as well as a variety of general ordnance stores, such as mess kits, canteens, bridles, saddles, printed targets, and scabbards. A detailed description of these operations appeared in the February 16, 1905 issue of American Machinist (see "Supplemental Material" section of this report). During the first two decades of the twentieth century, many of Shop C's manufacturing responsibilities were transferred to other buildings, and thereafter the shop concentrated on printing, woodworking, and leatherworking (excluding harnesses). This manufacturing program remained in force throughout World War II, after which the shop was cleared of production equipment and partitioned into office spaces (Nothstein and Stevens, p. 396; interview with Bouilly; for additional documentation, see HAER No. IL-20).

Prepared by: Jeffrey A. Hess
MacDonald and Mack Partnership
February 1985

PART 1I. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The building is a massive, late Greek Revival style, U-plan, limestone structure. It is two-and-one-half stories above a basement, with a gabled roof sheltering an attic. lt forms part of a symmetrical set of five buildings along the south side of Rodman Avenue, which is mirrored by a matching set on the north side.

2. Condition of fabric: The building is well-maintained and is in good condition.

B. Description of Exterior:

1. Overall dimensions: The main (north) block of the building (HAER Photo No. IL-20G-1) measures 210' x 60' (19 bays on the north elevation and 9 bays on the south elevation). Two wings (HAER Photo No. IL-20G-2), each measuring 240' (28 bays on their exterior elevations and 22 bays on their courtyard elevations x 60' (5 bays on their south elevations) stretch south from the east and west ends of the main block. Near each end of the outer, long elevations of the wings are projecting pavilions (HAER Photo No. IL-20G-2) measuring 60' (5 bays) and extending 15' (1 bay) from the wing elevations. At the south ends of the courtyard elevations of the wings is a pair of one bay x one bay, two-story additions with basements. At the north end of the east elevation is a very small, square addition housing the steam tunnel. The building is

two-and-one-half stories tall with a full basement and attic.

2. Foundations: Coursed, rock-faced ashlar limestone measuring 3'-0" thick below a dressed ashlar limestone water table. The north face of the northwest corner block of the water table contains the inscription, in block lettering, "BEGUN 1867" "FINISHED 1873". The addition foundations are reinforced concrete.

3. Walls: Coursed, rock-faced ashlar limestone (HAER Photo Nos. IL-20G-1 and IL-20G-2) decreasing in thickness by 6" with each story. Colossal rock-faced ashlar limestone pilasters (HAER Photo Nos. IL-20G-1 and IL-20G-2) rising from the water table to the entablature divide the elevations into a regular bay system. The dressed limestone entablature (HAER Photo Nos. IL-20G-1 and IL-20G-2) carries a projecting cornice (originally dressed limestone) of tan fiberglass simulating limestone. The pedimented gable ends (HAER Photo Nos. IL-20G-1 and IL-20G-2) are rock-faced ashlar limestone with dressed limestone cornices. There is a carved limestone block above the central entrance of the front (north) facade (HAER Photo No. IL-20G-1) bearing the date 1867. The addition walls are tan brick in imitation of the limestone walls. Tbe courtyard additions have brick pilasters and dressed limestone trim up to a flat roofline level with the limestone entablature.

4. Structural systems: Limestone bearing wall. Coursed, rock-faced limestone piers 20' on-center in the bssement support rivetted built-up cast-iron "Phoenix" columns on the first and second floors. First, second, and attic floor systems are wrought-iron stringers and joists with brick vaulting between. The roof system is iron Fink trusses. The additions have brick bearing walls and poured concrete floor and roof systems.

5. Porches: Porches (HAER Photo No. IL-20G-1 and IL-20G-2) are located st the center bays of the pavilions (except abutting Buildings 103 and 107), the south ends of the wings, the third bays from each end of the north elevation of the main block, and the center of the main block. Typical porches consist of poured concrete steps on rock-faced ashlar limestone base walls. The east elevation of the southeast pavilion porch base contains a doorway opening with rock-faced jambs, a segmental arch with rock-faced voussoirs and keystone, and a concrete sill. It extends in a vaulted passage to the east elevation of the pavilion basement.

6. Light wells: Across the south elevation (HAER Photo No. IL-20G-1) there is a narrow window well with rock-faced ashlar limestone walls to grade and a black steel pipe railing above grade.

7. Chimneys: A round sheet metal flue rises from grade along the east elevstion of the west brick addition to above the eaves.

8. Openings:

a. Doorways: Principal doorways (HAER Photo Noa. IL-20G-1 and IL-20G-2) are centered in the northeast snd southesst pavilions, the wing enda, the third bays from each end of the north elevation, and the first and sixteenth bays from the north end of the courtyard elevations of the wings. Those at the wing ends and courtyard are at the basement level, with an additionsl doorway at the south end of the west wing. Each has a rock-faced limestone segmental-arched head with a rock-faced keystone, and rock-faced limestone jambs with large, semi-circular, base blocks (now removed from msny of the doorways) projecting into the doorway. Most of the original limestone sill blocks have been replaced with poured poured concrete sills. The north elevation and pavilion doorways contain pairs of modern glasa doors with transoms and sidelights in black anodized aluminum framing. The wing end doorways contain modern overhead doors, as does the doorway of the west wing south courtyard elevation. The opposite doorway contsins a modern slab door with upper glass panel. The two north courtyard doorways contain original, large aliding wood doors with each having a pair of six-light sash in a segmental arch form over two wide panels. The doorway at the first-floor level of the west wing haa been filled with portions of the original wood-panelled doors. The original west pavilion doorwsys hsve been obliterated by later building additions. Narrower doorways are located in the center of the south (HAER Photo No. IL-20G-1) snd north (at the basement level) elevations of the main block and in the basement elevation of the northeast pavilion porch (HAER Photo No. IL-20G-2). These openings are identical to those of the principal doorwaya, differing only in width. The center doorway of the south elevation contains a pair of modern glasa doors with tranaom similar to those of the principsl doorways. The north doorway contains a modern slab door with upper glass panel in a concrete block surround. The porch doorway contains an identical slab door without the concrete block. In the fifth and seventh bays from the north of the courtysrd elevations of the wings are doorways matching the width of stsndard window openings. They bave ashlar limestone jambs, lintels formed by the water table, and dressed limestone sill blocks, similar to the adjacent window openings, differing only in length. The north doorway of the esst wing contains a modern slab door with upper glasa panel and concrete block surround. The remaining three doorways contain original four-light over two panel wood doors with transoms. The paired windows above the north basement doorway have been removed to create a doorway for the enclosed bridge lesding to Building 105. At the basement level south of the southeast pavilion, a window opening has been filled with a modern slsb

door with upper glass panel.

b. Windows: Typical basement, first-, and second-floor window openings (HAER Photo Nos. IL-20G-1 and IL-20G-2) contain six-over-six, double-hung, wood sash, snd have rock-faced limestone jambs, cut limestone sills and flat lintels. The lintels of the basement window openings (HAER Photo Nos. IL-20G-1 and IL-20G-2) are formed by the water table. Paired window openings (HAER Photo Nos. IL-20G-1 and IL-20G-2) above the primary doorways have segmental-arched rock-faced limestone voussoirs and keystones. Above the narrow, center doorways on the south and north (HAER Photo No. IL-20G-1) main block elevations are similar window openings containing pairs of four-over-four, double-hung, wood sash. Attic window openings (HAER Photo Nos. IL-20G-1 and IL-20G-2) contain small, single-light, casement, wood sash and are typically arranged in pairs of small openings in the building entablsture with sets of four centered in tbe gable ends and sets of three in the centers of the south snd north msin block elevations. These window openings have rock-faced jambs and sills and lintels formed by the entablsture and frieze. The gable ends (HAER Photo Nos. IL-20G-1 and IL-20G-2) contain paired window openings with rock-faced limestone jambs, segmental-arched, rock-faced limestone arches and keystones and dressed limestone sills. The courtyard addition windows have brick jambs, dressed limestone lintel and sill blocks and six-over-six, double-hung, wood sash st their basement, first-, and second-floor levels. Centered in the south elevation of tbe small addition at the north end of the west elevation is a simple brick opening containing s two-over-two, double-hung, wood sash. Some of the first-floor windows facing the courtyard have been filled with brick, as have all windows facing the courtyard additions. All surviving sash are painted white.

9. Roof:

a. Shape, covering: The roof (HAER Photo Nos. IL-20G-1 and IL-20G-2) is a cross-gable form covered with asphalt shingles.

b. Cornice, eaves: The cornice and eaves (HAER Photo Nos. IL-20G-1 and IL-20G-2) are fiberglass painted tan to simulate the original limestone cornice and eaves. Tbe interior metal gutter system is tied to exterior metal leaders which lead to an underground drainage system.

C. Description of Interior:

1. Floor plans: The building originally contained no interior partitions in keeping with its function as an open shop. Following its

conversion to offices after World War II, partitions were added, as needed. Most interior partitions date from the past decade. A passenger elevator serves the building at the intersection of the west wing with the main block. Modern restrooms are typically located in the pavilions of the basement, first, and second floors.

a. Basement: The basement is an open plan shop area. At the north end of the west elevation is a small addition sheltering the steam tunnel.

b. First floor: The first floor is essentially an open plan area with a number of enclosed offices.

c. Second floor: The second floor is basically an open plan area with a number of enclosed offices.

d. Attic: The attic is an open plan storage area with two fire walls located at the juncture of the wings with the main block.

2. Stairways: There are four U-plan stairways (HAER Photo No. IL-20G-3) with intermediate landings rising from the basement to the attic. These are located in each of the pavilions. Originally open, they are now enclosed. They are cast iron in curvilinear Italianate style forms with open risers and open, decorative railing supports and no newel posts. The landings are covered with concrete with a few at the attic level retaining hardwood flooring. The handrails are modern molded oak replacements with a clear varnish finish. They are each raised on a steel plate painted black. The additional height gained enables them to meet height requirements for safety. The bottom flights of stairs in the basement are limestone blocks.

3. Flooring: Basement flooring is poured concrete with a sealer applied to it. The first floor has poured concrete flooring covered with carpet. The second floor has wood flooring covered with linoleum tile. The attic has wood flooring with a clear varnish finish. Along the center of the attic floor is a set of steel plates forming a track.

4. Wall and ceiling finishes: Outer basement walls and interior piers are painted rock-faced sshlar limestone. Interior partition walls are painted brick, painted concrete block, painted gypsum board, demountable partitions, and wire cage. The ceiling is exposed and painted iron joists and stringers and brick vaulting.

Outer first- and second-floor walls are painted rock-faced limestone. The cast-iron columns are exposed and painted. Interior

partitions are painted brick, painted gypsum board, and demountable partitions. The ceilings are suspended acoustical tile.

The outer sttic walls are unpainted rock-faced ashlar limestone. The fire walls at the wings are covered with unpainted plaster. Interior partitions are unpsinted brick and gypsum board. The ceiling is the wood decking and rafters and purlins of the roof.

5. Openings:

   a. Doorways and doors: No original doorways survive. Thus, all doorways are of relatively recent vintage appropriate to their respective partitions.

   b. Windows: Window openings lack casings and are formed by the adjacent limestone.

6. Hardware: Original hardware survives on the original doors discussedabove. It includes heavy cast brass hingesand door pulls incorporating "RIA" into their faces. Surviving window hardware includes sash cords, pulleys, weights, and ornate lifts.

7. Mechanical equipment:

   a. Heating, air conditioning, ventilation: The building is heated by steam radiators from a central heating plant (Building 227). There is no air conditioning. Ventilation is provided by opening the window sash.

   b. Lighting: Artificial illumination is by means of incandescent electrical fixtures in the attic and fluorescent fixtures in the basement, first, and second floors. No evidence remains of original artificial lighting systems.

   c. Plumbing: No original plumbing fixtures survive.

   d. Elevators: Both original freight elevators have been removed. In place of one is a modern passenger elevator.

D. Site:

1. General setting and orientation: The building is set on the southwest corner of Rodman Avenue, the arsenal's principal street, and Second Street. West of the building is Building 102, an administration building. Connecting the two buildings is Building 103, another administration building. South of Building 103 and attached to the west elevation of the west wing is Building 107, a laboratory. The interior courtyard is paved and contains Building

105, an incinerator. South of the building runs South Avenue. The relatively level site slopes gently to the south.

Prepared by: David Arbogast
Architectural Conservator
February 1985

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings:

No original architectural drawings of the original construction or of major alterations have been located. In 1877, the Ordnance Department published a schematic plan of the building's siting and configuration, a "Side Elevation," and a "First Floor Plant" (Flager, Figure 1, inset on Plate I; Plate III, Plate IV).

B. Early Views:

The picture collection of the Rock Island Arsenal Historical Office has a photograph showing the building in the final stages of construction. It is captioned on the back, "From stereo card / Shop C Bld 104 / looking NW / CA. late summer 1871" (see HAER Photo No. IL-20G-4). The same collection also has a 1905 photograph (see HAER No. IL-20G-6; Stanley, 207) showing woodworking equipment on the second floor, and a 1944 photograph showing the brick additions on the south facades of the two wings. The latter is captioned on the front, "71-A / Looking northwest at Shop 'C,' Building #104 / 1 November 1944" (see HAER Photo No. IL-20G-5).

C. Interviews:

Robert Bouilly, Senior Historian, Rock Island Arsenal Historical Office, conducted by Jeffrey A. Hess, May 30, 1984; noted that building's conversion into offices post-dated World War II.

D. Bibliography:

1. Primary and unpublished sources:

Baylies, Libby and Bahr, Betsy. "Historic American Buildings Survey of the United States Materials and Mechanics Research Center, Watertown, Massachusetts." 1982. HAER No. MA-20, HABS/HAER Collection, Prints and Photographs Collection, Library of Congress. Discusses Rodman's architectural work at Watertown Arsenal.

Hess, Jeffrey A., and Mack, Robert C. "Historic Properties Report Rock Island Arsenal, Rock Island, Illinois". Prepared by MacDonald and Mack Partnership, and Building Technology Incorporated for the Historic American Buildings Survey/Historic American Engineering Record, National Park Service, U.S. Department of the Interior, 1985. The report, with accompanying inventory cards, is filed as field records in the Prints and Photographs Division, Library of Congress, under HAER No. IL-20.

"History of Rock Island Arsenal Called for by O.O. 25301-D-195." N.d. Rock Island Arsenal Historical Office. Detailed discussion of Shop C's manufacturing program to 1913.

Real Property Cards, Engineering Plans and Services Division, Rock Island Arsenal. Briefly describes building's structural characteristics and provides sketchy history of maintenance operations.

2. Secondary and published sources:

Completion Report Covering All Construction Projects Accomplished Under Supervision of the Construction Division, U.S. Army at Rock Island Arsenal. Rock Island Arsenal, 1919. Rock Island Arsenal Historical Office. Discusses planning and construction of connecting building between Shops A and C.

Flagler, D[aniel] W[ebster]. A History of the Rock Island Arsenal from Its Establishment in 1863 to December 1876. Washington, D.C.: Government Printing Office, 1877. The most detailed account of the building's construction, written by the arsenal's commandant from 1871 to 1886; contains side elevation and floor plan.

Nothstein, Ira O. and Stephens, Clifford W. A History of Rock Island Arsenal from Earliest Times to 1954. Rock Island: U.S. Army, Rock Island Arsenal, 1965. 3 vols. Rock Island Arsenal. The best account of the arsenal's general operations, with specific references to Shop C's manufacturing functions.

Stanley, F. A. "The United States Arsenal at Rock Island --III." American Machinist (February 16, 1905), 207-212. Contains detailed description of machinery layout and manufacturing program (see "Supplemental Material section of this report).

Zabecki, David T. "Father of the Rock Island Arsenal." Field Artillery Journal, 49 (January / February, 1951), 55-56. Discusses Rodman's pioneering work in cannon and propellant design.

E. Likely Sources Not Yet Investigated:

Record Group 156 at the National Archives contains correspondence on the construction and operation of Rock Island Arsenal from 1871 to 1903. This material is also available on 216 reels of microfilm at the Browning Museum, Rock Island Arsenal.

F. Supplemental Material

Photocopied data pages at the end of this report contain a description of Shop C's manufacturing program originally published in F.A. Stanleu. "The United States Arsenal at Rock Island --III," American Machinist (February 16, 1905), 211-212.

PART IV. PROJECT INFORMATION

This project was part of a program initiated through a memorandum of agreement between the National Park Service and the U.S. Department of the Army. Stanley J. Fried, Chief, Real Estate Branch of Heaquarters DARCOM, and Dr. Robert J. Kapsch, Chief of the Historic American Buildings Survey/Historic American Engineering Record, were program directors. Sally Kress Tompkins of HABS/HAER was program manager, and Robie S. Lange of HABS/HAER was project manager. Building Technology Incorporated, Silver Spring, Maryland, under the direction of William A. Brenner, acted as primary contractor, and MacDonald and Mack Partnership, Minneapolis, was a major subcontractor. The project included a survey of historic properties at Rock Island Arsenal, as well as preparation of an historic properties report and HABS/HAER documentation for 38 buildings. The survey, report, and documentation were completed by Jeffrey A. Hess, historian, Minneapolis; Barbara E. Hightower, historian, Minneapolis; David Arbogast, architectural historian, Iowa City, Iowa; and Robert C. Mack, architect, Minneapolis. The photographs were taken by Robert A. Ryan, J Ceronie, and Bruce A. Harms of Dennett, Muessig, Ryan, and Associates, Ltd., Iowa City, Iowa. Drawings were produced by John Palmer Low, Minneapolis.